Libraries on the Go
Mobile Websites and Apps

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Jet Propulsion Laboratory, California Institute of Technology

Research Center Information Managers (RCIM), May 5, 2011

Outline

- Trends on going mobile
- Mobile web sites vs. apps
- Examples from publishers/societies
- JPL mobile website

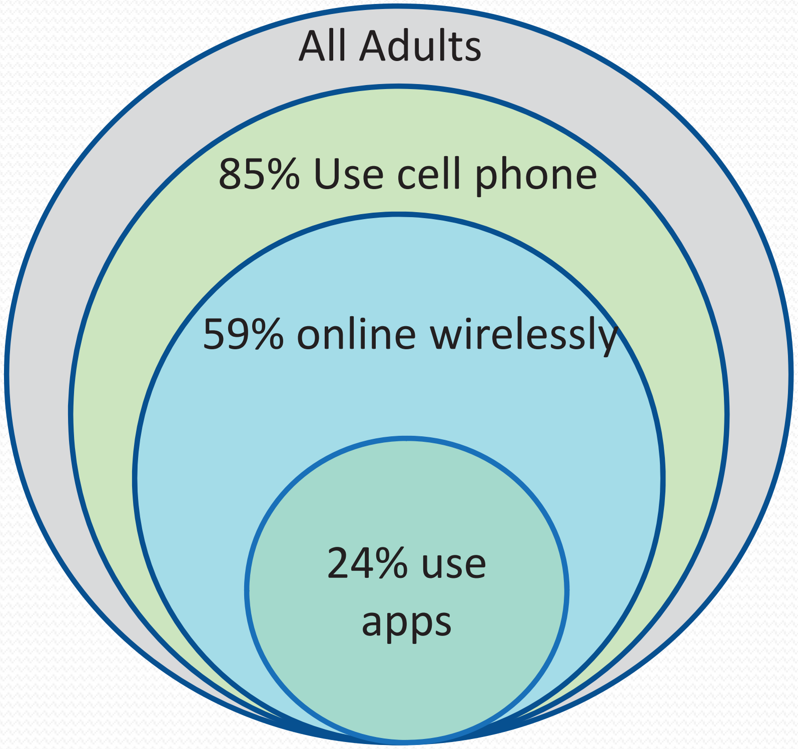
Trends

"Go mobile or get left behind"

- 25% waking hours on mobile devices
- 63% information management functions doing nothing to support handheld devices

  - "Top 10 Information Management Predictions for 2011", Outsell, Dec 2010

❖ More and more people are using mobile devices to access the Internet



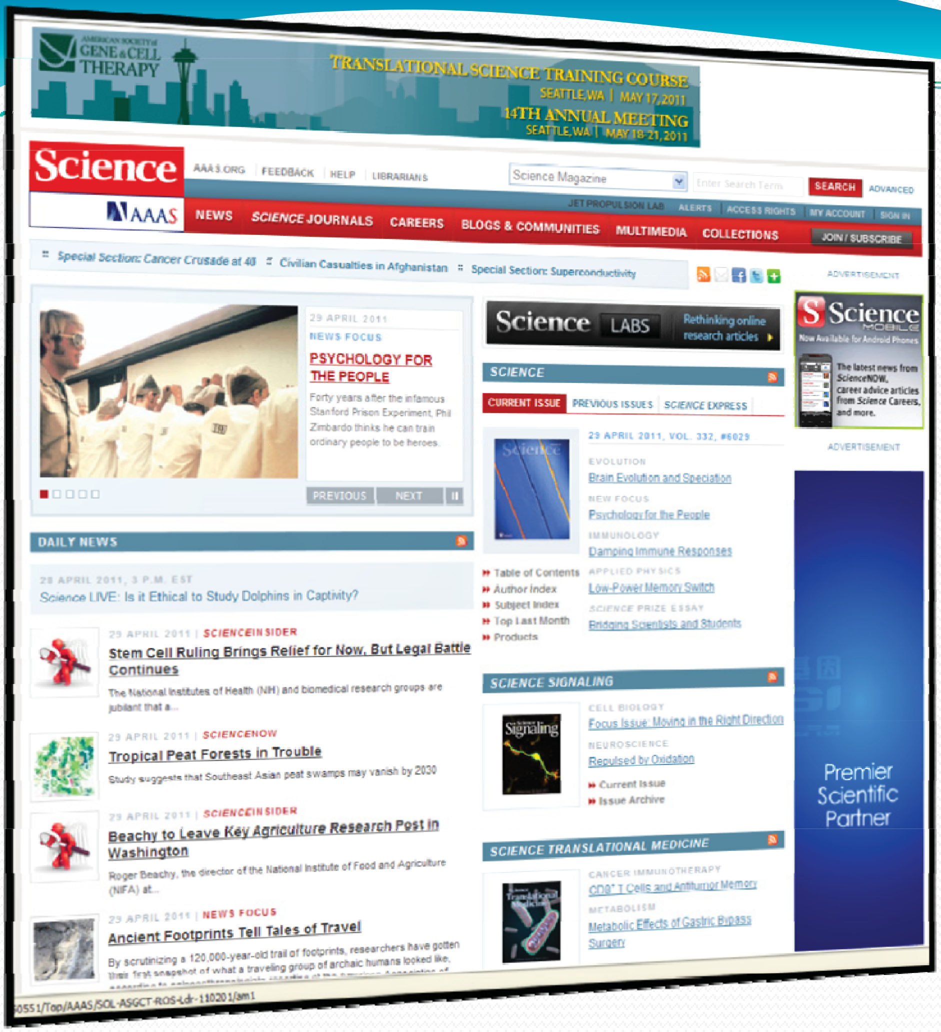
- Of all adults (18+), 85% use a cell phone
  - By ages:

    18-29: 89%

    30-49: 69%

    50-64: 49%
- 59% online wirelessly
  - Including laptops
- 24% use apps

- Pew Internet and American Life Project, Reported March 2011



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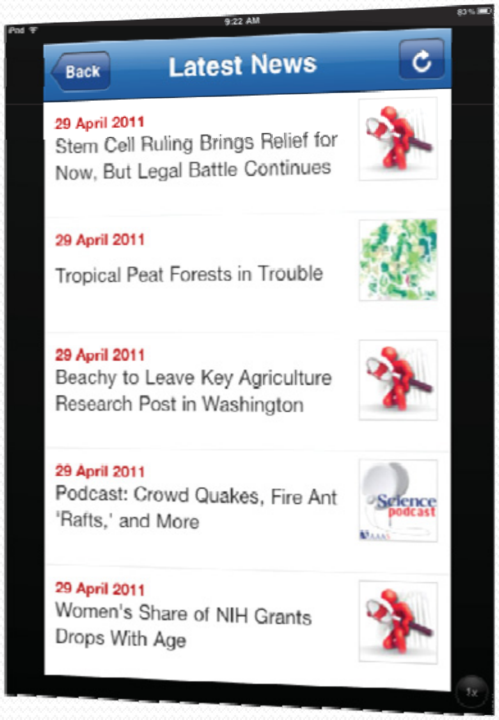

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29 April 2011
Women's Share of NIH Grants Drops With Age

- Longer, richer media on one page/site for laptop and desktop computers

- Short, context-based, specific interactions on mobiles (m-web, apps);

High Level Considerations

Mobile web sites

- Available to all devices
- Server detects requesting device and displays mobile site
- Simple navigation
- Point back to full site

Apps

- Device specific (iPhone, iPad, Droid, etc.)
- Distributed via devices' store or market
- One App on multiple devices:
  - Kindle for iPad, PC, Mac, etc.
- One App One Purpose/Function
  - YouTube, games

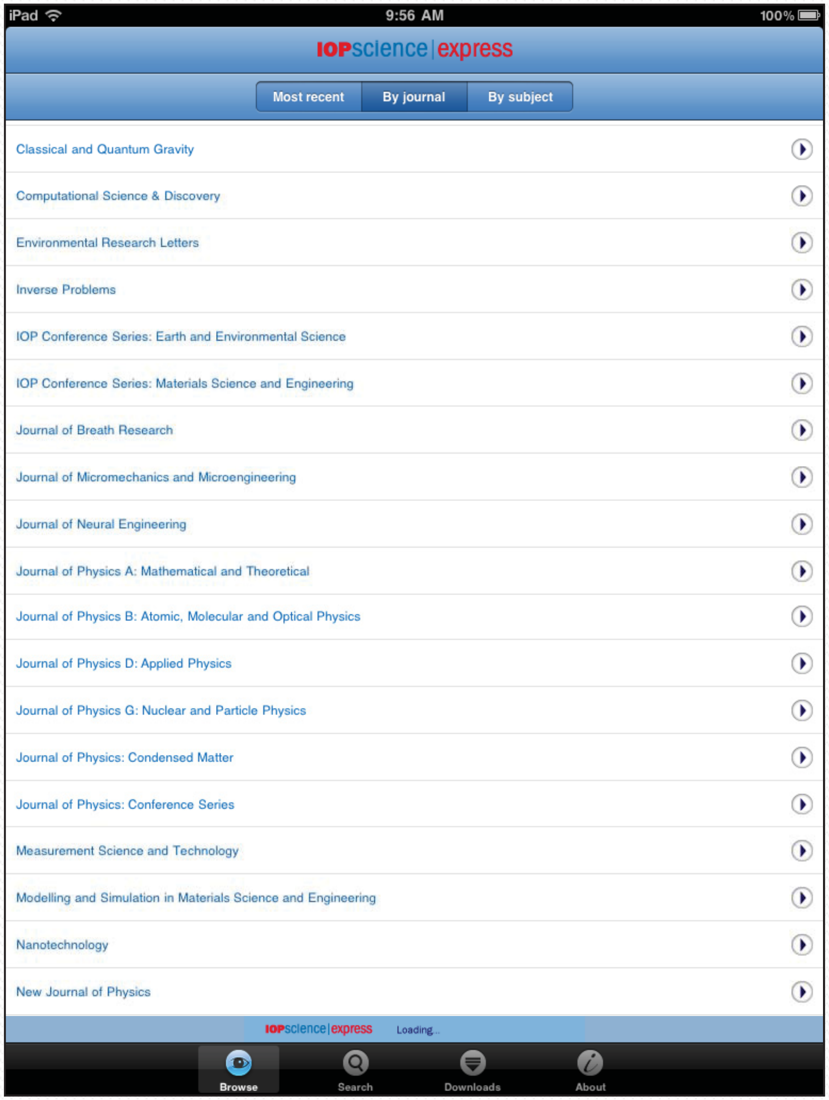
What Do Our Suppliers Have?

- Learn from their examples
- Information Professionals as trusted experts and curators of apps

Institute of Physics (IOP) app

- Free app

- 20 full text articles per month for anyone, no institutional subscriptions required!



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“Library Friendly” apps

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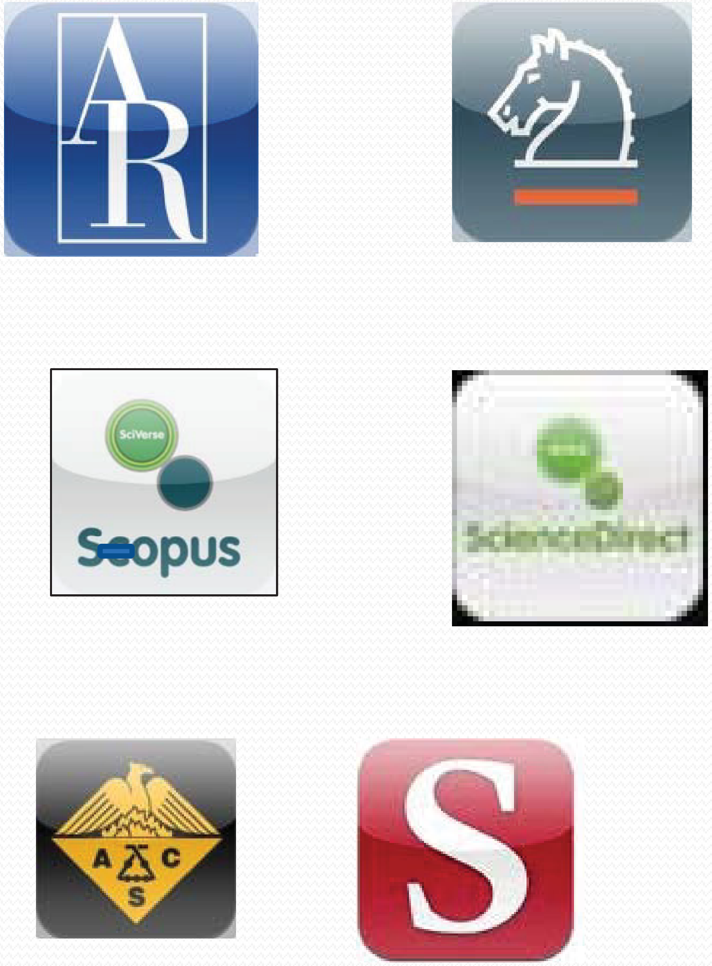
- ACS app costs $4.99 to download
- Science selected free articles



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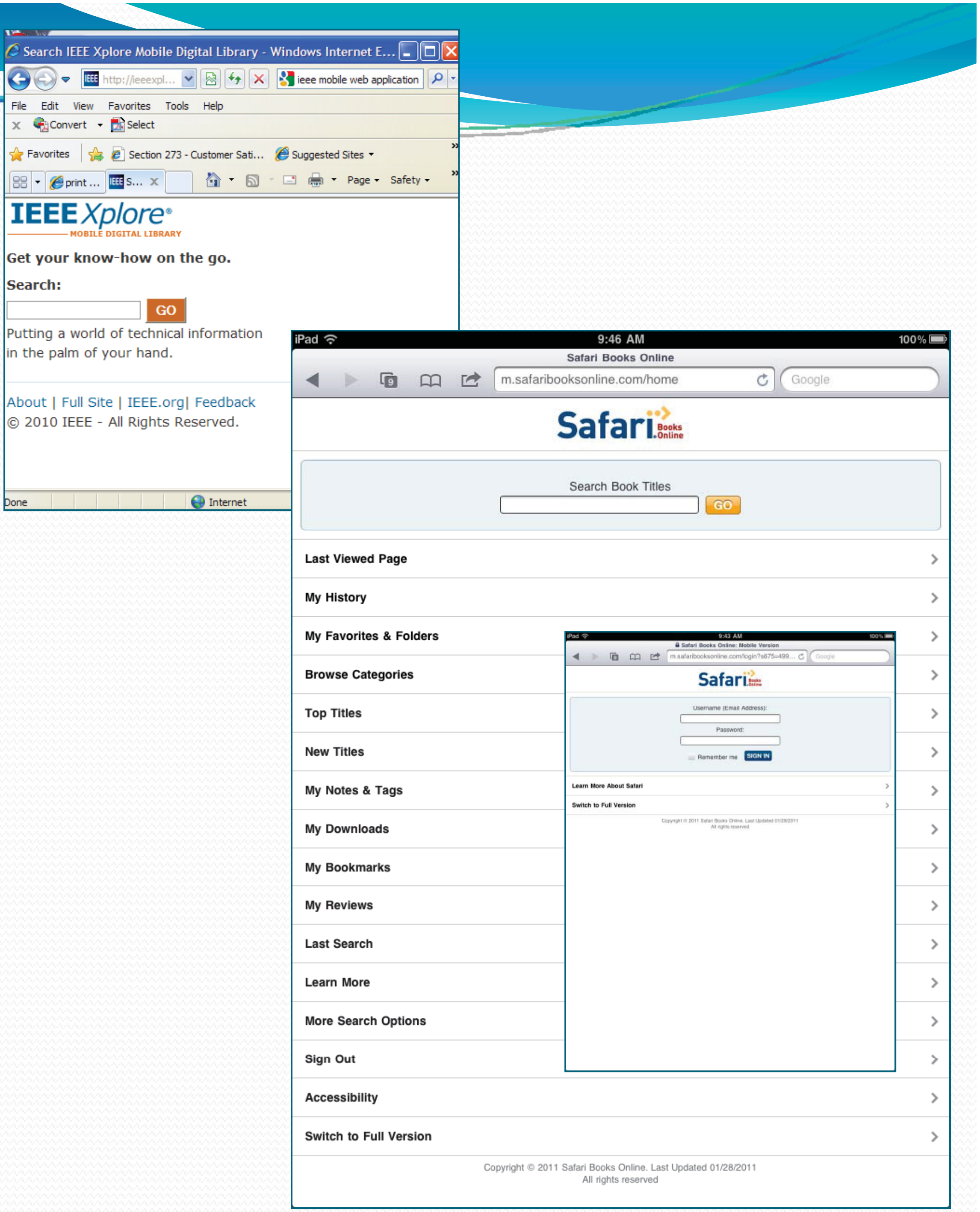

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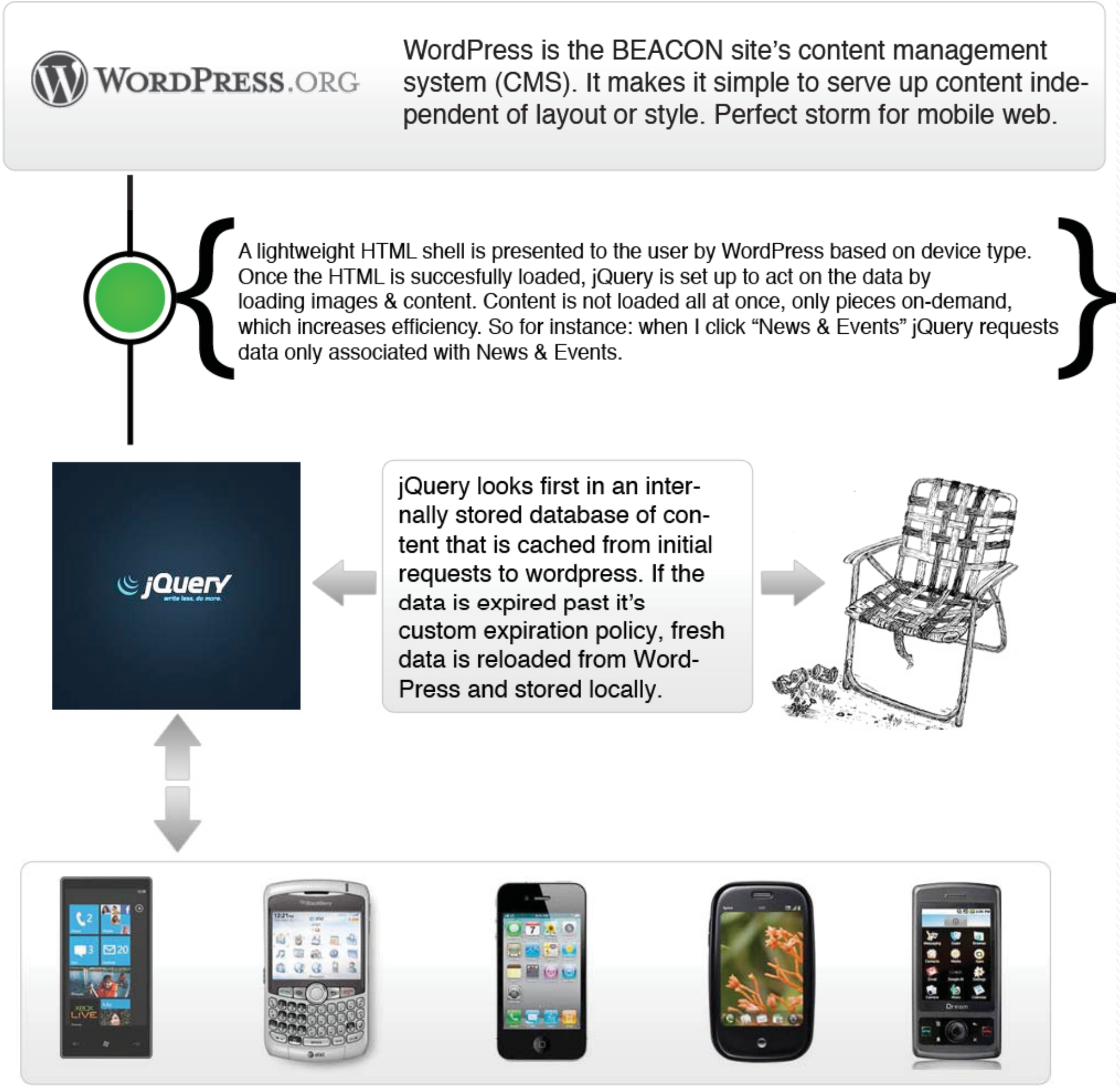
BEACON Library Mobile Site

Goals:

- Lightweight / Efficient
- Reuse targeted pieces of content from WordPress in an elegant way
- Harvest our ebooks list from delicious.com and re-use content in the mobile site
- Integrate a basic authenticated ILLiad 'My eDeliveries' feature
- Utilize few or no images, make layouts/styles dependent upon modern stylesheets
- Integrate Historical Photo of the Month & blog features in an elegant fashion.



WordPress is the BEACON site's content management system (CMS). It makes it simple to serve up content independent of layout or style. Perfect storm for mobile web.

A lightweight HTML shell is presented to the user by WordPress based on device type. Once the HTML is succesfully loaded, jQuery is set up to act on the data by loading images & content. Content is not loaded all at once, only pieces on-demand, which increases efficiency. So for instance: when I click "News & Events" jQuery requests data only associated with News & Events.

jQuery looks first in an internally stored database of content that is cached from initial requests to wordpress. If the data is expired past it's custom expiration policy, fresh data is reloaded from WordPress and stored locally.

The Problem Surrounding HTML5 Local Storage

For mobile developers the landscape was severely fragmented when it came to a new protocol: HTML5 and it's new feature of local storage.

HTML5 brought local storage into the picture but HOW it was queried and stored was a whole new ballgame.

Storing Frequently Used Information was tedious and not possible for small teams wearing many hats or teams without a dedicated mobile developer. Each browser handles local storage differently and has its own unique syntax for storing and retrieving data.

localStorage

```
// Save data to a the current session's store
localStorage.setItem("username", "John");

// Access some stored data
alert( "username = " +
localStorage.getItem("username"));
```

Drawbacks: No iteration over multiple objects with a common name. No deserialization for objects.

SQLite

```
// first create a table with a schema
CREATE TABLE 'atablename'(key INTE-
GER PRIMARY KEY ASC, temp, a, b);
CREATE TABLE 'joinedtable'(key INTEGER
PRIMARY KEY ASC, foreignid, c,d,e,f,etc);
//now insert some data in the 1st table
Query(INSERT INTO atablename
VALUES('',100,'b',1));
//prepare to do our 2nd insert into table#2
Var theglue = last_insert_rowid();
//more data insertion
Query(INSERT INTO joinedtable
VALUES('', theglue,etc,etc));
//now we can finally, slowly select some
data. The more JOINS = slower times.
Var result = query(SELECT * FROM atable-
name JOIN joinedtable ON atablename.key
= joinedtable.foreignkey WHERE .........)
//not done yet, lets loop through the data…
for(var i=0; i<result.length;i++){
$('div#temperature').html(result[i].temp);
}
```

Drawbacks: Schemas, more keystrokes, can be overkill for small projects, no deserialization for objects. Have to escape quotes.

DOMStorage

```
// Save data to a the current session's store
sessionStorage.setItem("username",
"John");

// Access some stored data
alert( "username = " +
sessionStorage.getItem("username"));
```

Drawbacks: No iteration over multiple objects with a common name. No deserialization for objects.

A New Perspective on Cross-Platform Storage/Apps

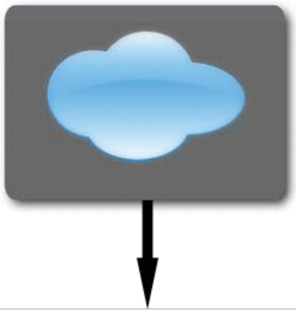
Lawnchair is something new to the game that aims to tie together the various local storage methods with a common query syntax that gracefully wraps around the native storage methods.

Lawnchair is maintained by Brian Leroux who also maintains PhoneGap.

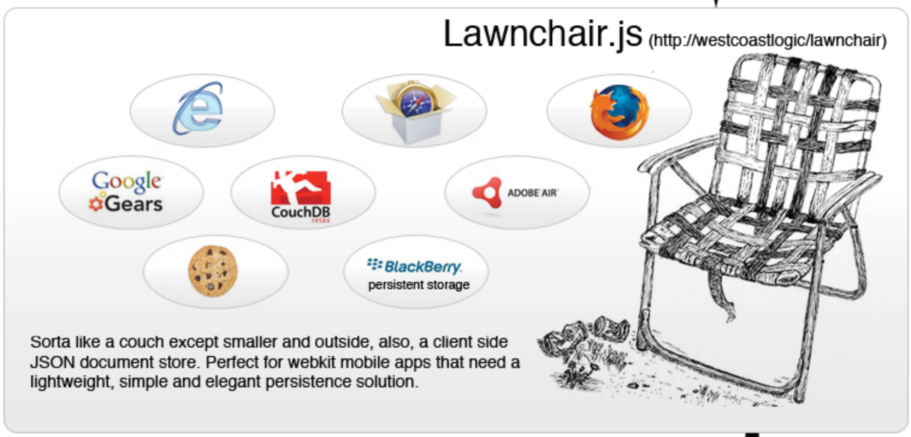
PhoneGap allows web developers to write a native smartphone app in HTML and JavaScript and publish it across many device formats (ie: the same code makes the same app for Android, iPhone, Palm, BlackBerry, etc).

HTML is very good at buttons, layouts, and data presentation, thus making a perfect platform for mobile apps.

The solution to the silo'd environment was using Lawnchair.js (an open source project).We are able to set caching policies for image data and page content. For instance, news and events items are refreshed only if the content has not been refreshed in 3 days. Using Lawnchair brought the total possible page size down from150 Kilobytes to 51 Kilobytes!

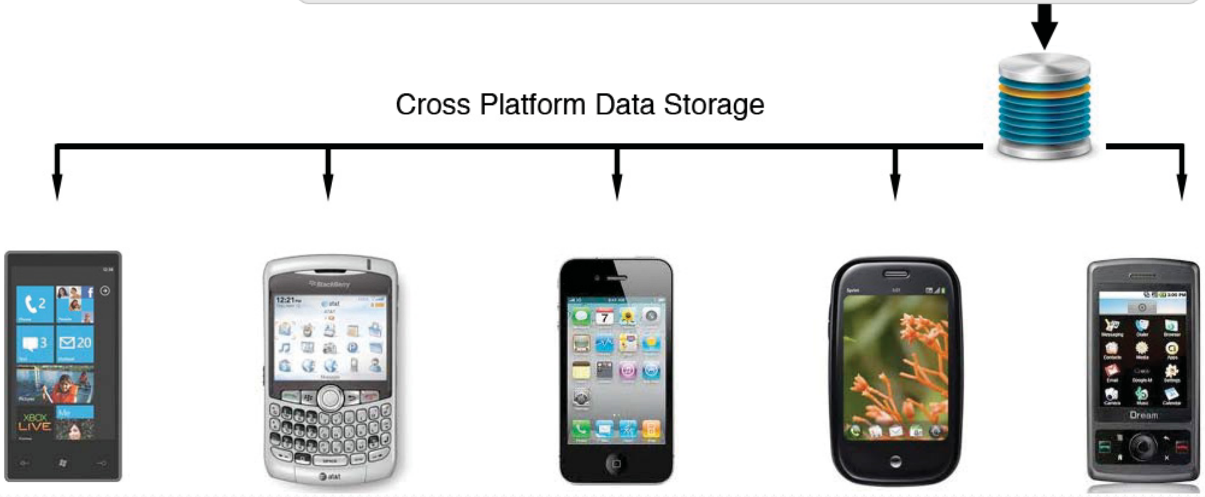


```
Make new datastore:
var lc = new Lawnchair('name');

Save document
lc.save({val1:'abc',val2:234,somethin
gelse:'111abcd'});

Find document
lc.find('r.val1 == "abc"',function(r){
//iterate over many
var dynamicvariable = r.val2;
});

//remove document
lc.remove({key:'unique_key'});
```



Lawnchair.js (http://westcoastlogic/lawnchair)

Sorta like a couch except smaller and outside, also, a client side JSON document store. Perfect for webkit mobile apps that need a lightweight, simple and elegant persistence solution.



Cross Platform Data Storage